# TECHNOLOGY OPPORTUNITY FACT SHEET

I. Statement of technology problem/opportunity

- Project Baseline Summary (PBS) Number: ID-WM-101
- STCG Need Number: 3.2.45, **Decontamination and Dismantlement Bulk Concrete Waste Disposal**

- Current Baseline Technology: One current accepted method to dispose of concrete has been to rubblize the concrete; and place it in wood or metal boxes for disposal at the Radioactive Waste Management Complex (RWMC). This method is labor intensive and not volumetrically efficient. The boxes are not 100% filled and the box itself can account for up to 60% of the volume once placed in the disposal pit. The new technology discussed in Section II below is less expensive and is much more efficient when disposed in the RWMC.

  Current Baseline Cost:

  The only costs being used here for comparison are the actual costs that were accrued in rubbleizing the concrete at the New ARMF TRA-660 building. These costs were itemized by the D&D Program and are listed below. No costs for administration, planning, decontamination of building, etc. are included.

| | | | |
|---|---|---|---|
| Remove concrete roof structure | 89 $yd^3$ . | 220 hrs | $19,903 |
| Remove above ground walls | 148 | 244 | 22,114 |
| Remove slab on grade | 133 | 165 | 14,927 |
| Remove foundation to 6 ft below Grade | 100 | 124 | 11,195 |
| Waste and material segregation | 470 | 233 | 21,084 |
| Transport waste | 470 | 233 | 21,084 |
| Cost of 4 ft x4 ft x 8 ft wooden box | $567 ea. @2.02 cu yd ea. (232 boxes) | | 131,544 |
| Totals | 470 $yd^3$ | 1219 hrs | 241,851 |

  The 4 ft x 4 ft x 8 ft wooden box has an inner volume of 73 $ft^3$ (2.7 $yd^3$ ) that is available to fill. The loading efficiency is 90% of that space, with soil. Rubbleized concrete will not have the same efficiency. It will be estimated at 75% of the 2.7 $yd^3$ (2.02 $yd^3$).

  Current Baseline Schedule: Technology is currently being demonstrated.

  Current Baseline Assumptions:
  For this baseline assumption, it will be assumed that the contaminated concrete will be handled by breaking or cutting up the entire structure and disposing of it all as contaminated waste.. A three or four man crew can rubbleize a large amount of concrete in one day. After the concrete is rubbleized it will have to be placed in waste containers for disposal. Those costs will involve equipment and manpower at whatever the rate for

them is. Depending on the unique condition that exist at each D&D site, other new technologies, such as the use of soft-side disposal containers, may prove more cost effective.

- Window of opportunity for innovative technology, e.g., deployment date
  **Successful demonstration of the technology has occurred this fiscal year and deployment could begin immediately.**
- Minimum technology performance requirements

- Projected benefits from innovative technology, i.e., schedule, cost, performance
  Savings in wooden boxes required to dispose waste, and more efficient use of the RWMC Disposal Pit.
- Point of contact – name, e-mail, phone
  LMITCO Point-of-Contact: Roger R. Piscitella (208) 526-1137, Fax 526-2714, E-mail: rrp@inel.gov

II. Description of candidate technology solution. Information should include, where possible

- Name of technology
  Decontamination and Dismantlement Bulk Concrete Waste Disposal (Slab Concrete Disposal)
  The new method cuts the concrete into slabs, wraps these slabs in plastic (i.e., Herculite) and directly disposes of these slabs in the RWMC Disposal Pit. . By utilizing this new slab method, waste container costs are reduced at the D&D site and space is conserved at the RWMC. The D&D estimation for slabbing concrete is two (2) times the amount of time to rubbleize the concrete.

| | | | |
|---|---|---|---|
| Remove concrete roof structure | 89 $yd^3$ . | 440 hrs | $39,806 |
| Remove above ground walls | 148 | 488 | 44,228 |
| Remove slab on grade | 133 | 330 | 29,854 |
| Remove foundation to 6 ft below grade | 100 | 248 | 22,390 |
| Wrap waste and material segregation | 470 | 233 | 21,084 |
| Transport waste | 470 | 233 | 21,084 |
| Cost of Herculite | | | 2,000 |
| Totals | 470 $yd^3$ | 1972 hrs | 180,446 |

While the labor costs have doubled for slabbing the concrete, substantial savings have occurred because purchase of the wooden boxes has been eliminated. A net saving of $61,405 is realized.